

## AFRL satellites released from Space Shuttle

*by Fran Crumb, Information Directorate*

ROME, N.Y. — Two “pico satellites,” weighing slightly more than two pounds each, were successfully released Dec. 6 from a specialized spring-loaded launcher assembly mounted on the sidewall of the space shuttle Endeavor en-route from the International Space Station (ISS).

The MEMS-based PICOSAT Inspector (MEPSI) experiment was developed by scientists and engineers at the Air Force Research Laboratory’s Information Directorate as a significant step forward in the development of an on-board autonomous inspection capability. The Information Directorate is managing the program under funding from the Defense Advanced Research Projects Agency (DARPA) of Arlington, Va.

“These are the smallest functional satellites in the world, and the smallest satellite payload ever carried on the Space Shuttle,” said David C. Williamson, program manager in the directorate’s Information Technology Division. “The Shuttle deployment was the latest in a series of experiments that will lead up to autonomous inspection systems for situational awareness of space systems.”

“Pico satellites will eventually orbit in near vicinity of a spacecraft to monitor for maintenance and failure-detection purposes, or perhaps to serve as a protection against natural or manmade threats to the spacecraft,” said Williamson. “These small satellites will be capable of independently monitoring the status of the spacecraft and communicate that data directly to earth.”

The two satellites, built by The Aerospace Corporation and the NASA Jet Propulsion Laboratory (JPL), are adjoined by a 50 ft non-conducting tether to facilitate detection by Earth-based radar and keep them within radio range of each other. They are expected to re-enter the earth’s atmosphere in approximately three months.

Objectives of the current mission include: demonstration of a launcher assembly approved for use in the shuttle cargo bay; establish communications and data exchange between the two PICOSATs and the ground station; exercise on-board Microelectromechanical Systems (MEMS) inertial measurement system; and improved transmitting power. Information Directorate researchers envision MEPSI will enhance satellite command and control operations by providing active, on-board imaging capability to assess spacecraft damages, monitor launch and deployment sequences, and augment servicing operations.

“This will provide the foundation for a rapid feedback capability for spacecraft operators to detect and respond to anomalies for maintaining continual service to their users and enable ultimate spacecraft longevity,” said Williamson. @